



PLATE 37

Pupa of *Jocara trabalis*, enlarged x 4.
A. Dorsal aspect. B. Ventral aspect. C. Lateral aspect.

Photo by Menke, retouched by Comstock



MISCELLANEOUS NOTES ON WESTERN LEPIDOPTERA

By JOHN A. COMSTOCK

The Lorquin Entomological Club has on its membership a number of keen observers and ardent collectors who have done much to enlarge our knowledge of the range and habits of Southern California butterflies.

During the first week of September, 1934, one of these enthusiasts, Mr. C. N. Rudkin, was motoring through the Ibanpah Mountains. He noticed a number of *Papilio*s congregated at a moist spot in the road. Reporting this at one of the Club meetings resulted in the capture of a long series by several members, including the writer. Mr. Rudkin pointed out to us at the time that certain points of difference seemed to exist be-

tween Holland's figure of the type of *Papilio brucei* and our Ibanpah Mountains examples. Later, specimens were sent to Dr. McDunnough by Commander C. M. Dammers, of Riverside, which drew forth significant comments, as follows:

"*Brucei*— was originally described from Glenwood Springs, Colorado, and is the dimorphic form of what I suppose will have to be called *hollandii*, if we are going to split the Colorado race from the race of the southwestern region.

"If this is done your so-called *brucei* would really need a name, as it is not exactly the same as the few specimens I have before me from Glenwood Springs. You might call the matter to Dr. Comstock's attention and let him work it out, if he so desires."

Acting on this very generous suggestion of Dr. McDunnough's, I have made careful comparisons with such material as is in our collections, of the plate of the so-called "type" in Holland's book,¹ and of the original description of *brucei* as given by W. H. Edwards.²

I am led to the conclusion that our California examples belong to a distinct race, and therefore propose the name *rudkini* in recognition of our fellow club member's discovery and observations.

Papilio bairdii form **rudkini**, f. nov.

Expanse (of the holotype, which is about of average size) 25 $\frac{3}{8}$ inches. Holotype ♂, Ibanpah Mts., Calif., September 9, 1934.

Primaries; upper side. Fringes black at the ends of the nervules, yellow between; a submarginal row of eight ovate spots; internal to this a broad black area occasionally flecked through its center with a few yellow scales.

In the inner half of the limbal area there is a broad band of irregularly quadrate yellow spots beginning with a small very irregular one close to the apex, followed below by progressively larger and longer spots. The lateral edges of these spots are more consistently curved outwardly rather than straight, as in the Colorado form, or slightly concave as in the true *oregonia*.

The basal area is very slightly powdered with yellow scales on a rich black background. There is a crescentic yellow spot at the apex of the cell, and an irregularly subquadrate one about 3 mm. internal to it. The latter is exceedingly variable in size.

¹ The Butterfly Book, rev. ed. W. J. Holland. Pl. XL, fig. 4.

² Can. Ent. Vol. XXVII, p. 239, 1895.

Secondaries: A submarginal row of lunate spots, considerably smaller on the average than with the Colorado form. The wide limbal black band has only a sparse sprinkling of blue scales through its center. The orange spot at the anal angle is round, and black pupiled. The discal yellow band is heavily dentate on its outer margin. The basal black area measures about 2.75 mm. in width.

On the under side, the primaries have the row of submarginal oval spots reproduced with very little enlargement, and no tendency to confluence or the production of a band as in *oregonia*.

The two discal yellow spots are present, but there is no other area of yellow scaling within the disc.

The secondaries show a rather constant suffusion of the submarginal yellow crescents with orange scales, particularly on those that are close to the costal margin. There is also a rich suffusion of orange along the outer margin of the wide discal yellow area.

The body is black on the dorsum. There is a wide yellow area on the lateral surface of the abdomen, below which is a narrow black band. Internal to this is a narrow yellow area, and on the venter a wide black band, sometimes containing a few yellow scales in its center. There is, however, considerable variation in the placement and extent of these yellow and black areas.

Allotype ♀. Ibanpah Mts., Calif., September 9, 1934. Differs from the male principally in its slightly larger size and in the greater extent of the blue suffusion and spots on the secondaries.

Paratypes. Nos. 1 to 30 taken in the Ibanpah Mts., from September 9, 1934 to July 1, 1935.

Holotype and allotype in the collection of the Los Angeles Museum. Paratypes will be distributed to the United States National Museum, the Canadian National Museum at Ottawa, the California Academy of Sciences at San Francisco, and the British Museum.

This species flies in association with typical *bairdii*, and interbreeds with it. However, the proportion of *bairdii* to *rudkini* is about fifty of the latter to one of the former. We have collected and reared over four hundred examples from larvae. The two forms cannot be separated in the larval state. Edwards notes that in Colorado, the light and dark forms are about equally represented. Furthermore the Colorado foodplant is *Artemisia*, whereas on the Mojave Desert, and in the desert ranges of California, it is *Thamnosia montana* Torr. and Frem. (Turpentine Broom). Commander Dammers has complete notes on the metamorphosis of *rudkini*, which will later appear in this Bulletin. Mr. C. Henne was the first to report the foodplant.

We take this opportunity of expressing our appreciation for the generous aid in this matter extended by Dr. J. McDun-

nough. Were it not for his helpful coöperation, our western students of the lepidoptera, far removed as they are from large libraries and collections, would not be able to solve many problems.

EUPHYDRYAS MAGDALENA B. & Mc. D.

One of the most distinctive of the Euphydryads of eastern Arizona is the small dark species of the White Mountain area named *magdalena*. This butterfly occurs at high elevations and is on the wing in late July, August, and possibly early September. We first observed it in Hannigan's Meadows in 1930, and on July 27 of that year secured a few eggs from a captive female which we were unable to bring through.

In June of this year, while collecting in the alpine meadows on the Springerville-McNary road, five larvae were taken. Two of these were carried to the pupal stage, and one gave forth an imago on July 16. The larvae were all found on grass into which they had probably crawled to pupate or molt.

The two examples that were successfully reared to chrysalis fed on the common lowland species of *Plantago*. Probably some dwarf alpine species of this genus supports them on their native heath.

Egg. .5 mm, broad x .6 mm, high. Color, bright yellow. The form is of the usual type for the genus, and is illustrated on Plate 38. The upper half bears about fourteen longitudinal ridges, between which are numerous secondary striae running at right angles to the main ridges. The lower half of the egg is irregularly pitted.



PLATE 38

Egg of *Euphydryas magdalena*, enlarged x 45.

Drawing by J. A. Comstock

Mature larva. Length, 18 mm. Ground color, ivory, mottled with black.

The characteristic number of branching spines are present, the color of these being black. Those of the mid-dorsal row arise from orange-yellow papillae. Between each papillus runs a narrow black line.

The next dorso-lateral row of spines arise from a black mottled area, which gives the larva an appearance of having a prominent dorso-lateral black band.

The spines of the next lateral row have narrow orange-yellow circlets at their bases, as have also the spines of the fourth (infra-stigmatal) row.

Stigmata, black. There is a mottled black area between each breathing hole which gives the appearance of a stigmatal line. Legs, black. Prolegs and anal proleg, straw.

Head, black, thickly covered with short black hair.

The first example pupated June 18, and subsequently died. A second specimen pupated July 6, and the imago emerged July 16. The mature larva, dorsal view, is shown on Plate 39.



PLATE 39

Mature larva of *Euphydryas magdalena*, dorsal aspect, enlarged x 3½.

Photo by Menke, retouched by Comstock

Pupa. Length, 10 mm. Ground color, lustrous white, heavily marked with black dots and dashes, as shown in the illustration, Plate 40.

All of the nodules representing vestiges of the larval spines are a deep orange.

Antennal sheaths heavily checkered with black squares, separated by narrow white segmental lines.

Ocellar ribbon, black—the remainder of the eye white, slightly tinged with orange at the corners.

There is a slight shading of orange-brown on the shoulder and across the center of the wing cases. Spiracles black.

Cremaster, brown at the end—soiled ivory at the base.

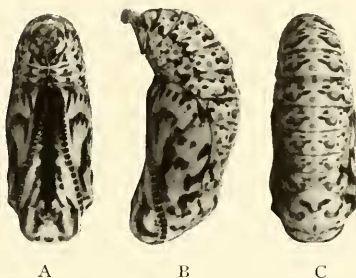


PLATE 40

Pupa of *Euphydryas magdalena*, enlarged x 3.

Photo by Menke, retouched by Comstock

CALEPHELIS NEMESIS ETC.

Southern California collectors have labored under some confusion with regard to the correct names for the various species of *Calephelis* occurring within our borders, owing to our inability to make comparison with the types and with compared-type material.

A series of specimens, submitted by Commander Dammers to Dr. Foster H. Benjamin and by him given genitalic study, has brought out the following points:

The small form, with dark bands across the center of the wings which we have hitherto been designating as *nemesis*, proves to be the true *australis*.

A somewhat similar form, taken at Blythe, in which the dark bands are slightly less pronounced, and the primaries in the male less pointed at the apices, is the true *nemesis*.

The large light form which lacks the dark band across the

wings has heretofore gone by the name of *australis*, and is so designated on Plate 47, Figs. 16 and 17, "Butterflies of California."

This will probably have to be called *Calephelis wrighti* Holland.

The latter species was described from specimens illustrated by W. G. Wright, on Plate XXVII, Figs. 303 and 303c of "Butterflies of the West Coast," under the name of *C. nemesis*. We can match this figure with faded males taken at Palm Springs. Wright's specimens were accredited to Mendocino County, but we are of the opinion that they were actually taken in the Coachella Valley.

Wright was a commercial collector, and it is known that he frequently mislabeled his specimens in order to keep others from visiting his favorite collecting grounds and spoiling his market.

Commander Dammers and the author described the early stages of what we have been calling *Calephelis nemesis*, in the Bulletin Southern California Academy of Sciences, Vol. XXXI, p. 12. This will have to be changed to *C. australis*.

The prior description by the author, of the metamorphosis of the so-called *C. australis* (Bull. So. Calif. Ac. Sci., Vol. XXVII, p. 80), will apply to *Calephelis wrighti*.

We are indebted to Dr. Benjamin for another important correction to our list of California butterflies.

The small species of *Thorybes* occurring in Southern California which we illustrated as *T. mexicana* in "Butterflies of California" on Plate 58, Figs. 1 and 2, proves to be merely a dwarf western race of *Thorybes pylades* Scud. Dr. Benjamin makes this determination on the basis of genitalic studies made from material submitted by Commander Dammers.

In correspondence with Dr. Bell, and from an analysis of original descriptions of *T. mexicana* H. S., and *T. diversus* Bell we were inclined to place our Southern California examples under the latter name, and so stated in Bull. So. Calif. Acad. of Sciences, Vol. XXXIII, p. 33.

Our description of the metamorphosis, as published in Bull. So. Calif. Acad. of Sciences, Vol. XXXII, p. 110, will therefore have to apply to *T. pylades*.

It may be noted however that California examples, in spite of the similarity of genitalia, show a tendency toward a reduction of the size of spots in the lower half of the primaries, and a somewhat more rounded secondary, when compared with examples from the eastern seaboard.

PLATYPREPIA GUTTATA F. OCHRACEA Stretch.

This form occurs in the coastal regions near Santa Barbara, feeding on Lupines. Examples were sent us by Mr. and Mrs. Carl W. Kirkwood of Santa Barbara, from one of which the accompanying illustration was made. A brief note concerning the larva was published by Packard in the Hayden Survey,³ and Stretch has given a description of the larva and cocoon,⁴ and reproduced a very poor figure of the caterpillar on Plate 10, Fig. 1, of that work. Since the last quoted book is not accessible to the average entomologist, it is felt that a brief description of the larva, and a reproduction from an actual photograph, will serve a useful purpose. See Plate 41.



PLATE 41

Mature larva of *Platyprepia guttata*, enlarged.

Photo by Menke

Mature larva: body black, the first three segments clothed with dense rust-red hairs; the remaining segments with very long silky white hairs, mingled with black along the sides, and a few rusty hairs on the anal segments.

³ Hayden's Survey of the Territories, 1873, p. 559.

⁴ Zygaenidae and Bombycidae of N. Am., p. 71, 1873.

APANTESIS NEVADENSIS F. GENEURA Strecker.

Larva of this species were secured by Mr. M. L. Walton of Glendale, Calif., feeding on *Purshia*, *Artemisia*, and a low yellow flowering unidentified plant. Numerous examples were collected at an elevation of 9,100 feet on the summit of the Inyo Mts., on May 10, 1930.

The mature larva is black on the body and head, and is thickly covered with stiff single hairs arising from warty nodules. These hairs are black in the area above the stigmata, while inferior to this area they are russet brown.

The illustration of the larva, Plate 42, shows the placement of the nodules and arrangement of the hairs.

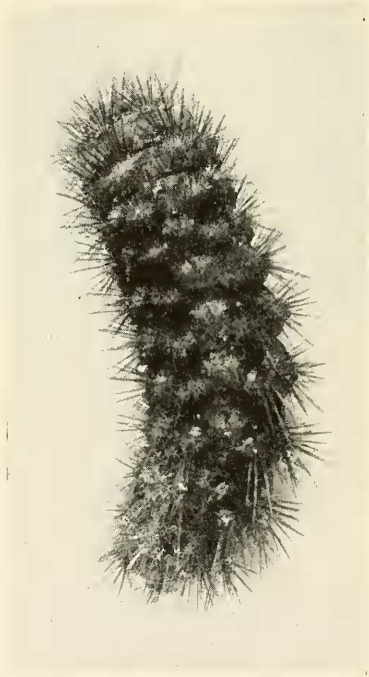


PLATE 42

Mature larva of *Apantesis nevadensis geneura*,
dorsal view, enlarged.

Photo by Menke

Pupa. Dark brown, or blackish brown, covered with a light bloom or powdery substance which easily rubs off. The antennal cases are robust, and widely separated through the mid-thoracic region, which helps to produce the maximum width of the chrysalis through this area. There are a number of minute vibrissae protruding from the anterior portions of the head, and four short stout cremasteric hooks at the caudal end. The pupa is illustrated on Plate 43.

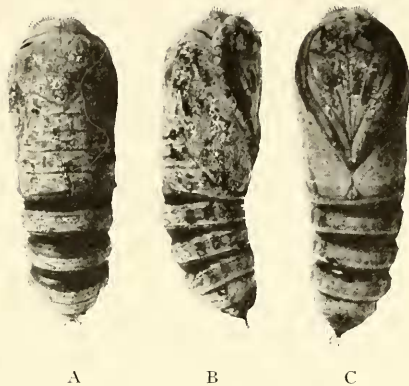


PLATE 43

Pupa of *Apantesis nevadensis geneura*, enlarged.

A. Dorsal aspect. B. Lateral aspect. C. Ventral aspect.

Photo by Menke, retouched by Comstock

The dates of pupation and emergence of those examples which came to maturity were as follows:

Pupated June 10	...	Emerged June 30
" " 11	...	" July 9
" " 19	...	" " 12
" " 21	...	" " 15

While collecting larvae it was observed that when the bush on which they were feeding was touched they would invariably drop and secrete themselves under leaves, or in holes in the ground.

EUTREPSIA CEPHISARIA Grote.

During the first part of August, 1930, while collecting on the Greer Road in the White Mountains of Arizona, a long series of a black day-flying moth was secured. This was at first thought to be *Melanchroia chephise* Cr., as examples in the Los Angeles Museum collected were so labeled. A comparison of these with examples from Florida convinced us that the Arizona specimens were not *M. chephise* Cr. as the latter species shows a large white patch on the apex of primaries, and the

thorax is distinctly orange. In the Arizona specimens there is a white fringe on the primaries, but no expansion of this into a white spot on the apex. Furthermore the thorax is black, and there are scarlet scales on the collar and lappets, and a patch of pink-scarlet at the base of each wing on the under side, in the Arizona species.

Examples were submitted to Dr. Benjamin of the Department of Agriculture at Washington, and he has kindly determined the Arizona species as *Eutrepsia cephisaria* Grote. I quote from his letter as follows:

"The name *cephisaria* Grote is available for it" (the Arizona species). "This name is not a synonym of *inconstans* Geyer, and the latter name should be stricken from our lists.

"The generic name *Eutrepsia* H. S., type *inconstans* Geyer is available for use over the name *Ocnotrus*, although the latter is in almost universal use in collections dealing with tropical species."

Eutrepsia cephisaria Grote deposits its eggs on the edge of the under surface of the leaves of *Monarda fistula* L. They are usually laid singly, but occasionally two or three are deposited together.

The egg is a flattened oval, measuring .75 mm. in length by .50 mm. in width and is about .40 mm. thick. In color it is pearly or cream white. The texture of the surface is apparently smooth, but careful examination discloses a fine reticulation in the form of regularly placed hexagons outlined in very low relief.

Plate 44 illustrates the egg.

Our limited facilities in camp made it impossible to record the larva.

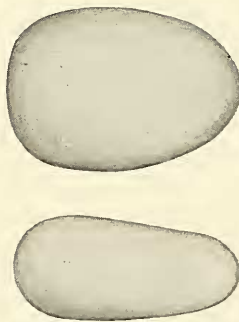


PLATE 44

Egg of *Eutrepsia cephisaria*, magnified x 42.
Upper figure, top view. Lower figure, side view.

Drawing by J. A. Comstock

ITAME COLATA Grt.

Along the eastern base of the Sierras, and extending south through the Tejon Pass, the San Gabriel Mts., west of Phelan, and in the San Bernardino Mts. bordering the Mojave Desert, there occurs a belt of *Purshia glandulosa*, growing in association with juniper and yucca.

On the *Purshia*, in proper season, are to be found a number of different larvae, all of which are protectively colored, and hence difficult to see. They may however be beaten to the ground and collected thus in abundance.

From this bush we have bred *Callipsyche behrii*, recorded some time ago,* and more recently we reared a number of examples of *Itame colata* Grt. As the metamorphosis of the latter species has not been recorded we append the following brief notes:

Mature larva; body ground color, green. There is a dark green mid-dorsal band, more or less broken in character, and edged outwardly with a narrow white crenulated line. Lateral to this is a green area extending down to the spiracles, but more or less bisected by a broken line or series of dashes some of which are yellow—others white.

Below each spiracle (sometimes partially surrounding it) is a sub-triangular dash of white, tipped with yellow at its posterior end. Below this and extending on to the abdomen is the usual mottled green body color, partially interrupted in the mid-abdominal area by a series of broken and irregular whitish or yellow lines.

Each segment bears a number of single black hairs arising from raised black-tipped papillae.

Spiracles, orange brown, with brownish black rims.

True legs, yellowish, with brown terminal hooks. Proleg green. Anal proleg green, with a white dash across its center.

The head is a mottled green, with short sparsely placed black hairs. Ocelli colorless, the upper two with black tips. Mouth parts tinged with brown.

This larva is of the measuring worm, or looper type, as will be noted from the accompanying illustration, Plate 45.



PLATE 45

Mature larva of *Itame colata*, lateral aspect, enlarged.

Photo by Menke, retouched by Comstock

* Bull. So. Calif. Acad. Sciences, XXVII, Pt. 2, p. 63, 1928.

Pupa. Length, 9.5 mm. Greatest width 2.6 mm.

The thorax, wing cases, and anterior two-thirds of venter are a greenish brown. Abdomen and head, yellow-brown.

The abdominal surface is heavily pitted; wing cases, thorax and head areas smooth and shiny.

Cremasteric button, brownish black, heavily rugose, with two cremasteric hooks the ends of which are bifurcated.

Meso-thoracic spiracle, blackish brown, slightly protruded, and with a row of minute vibrissae along the anterior margin.

There is a single long colorless hair placed anterior to the first four spiracles on each side, each one arising from a minute papillus. A few scant hairs of similar character arise from various parts of the thoracic and abdominal surfaces. Otherwise the pupa is free of appendages.

Spiracles, concolorous with body, the rims slightly darker. The shape and texture of this chrysalis is adequately pictured in Plate 46.

Pupation occurred on the floor of the breeding cage.

Our examples were secured from two separate locations, namely: Mt. Pinus road about one and one-half miles from Lebec, Calif; and one mile south of Phelan, Mojave Desert.

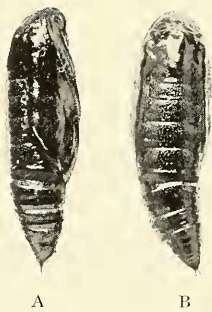


PLATE 46

Pupa of *Itame colata*, enlarged x 3½.

A. Lateral aspect. B. Dorsal aspect.

Photo by Menke, retouched by Comstock